

1 I CLAIM:

2  
3 1. A method for establishing an end-to-side anastomosis between  
4 a severed end of a first hollow organ and a side-wall of a second  
5 hollow organ, the method comprising:

6 (a) introducing an anastomosis coupling apparatus, having an  
7 input end and output end, said apparatus comprised to engage said  
8 severed end of a first hollow organ with said input end and engage  
9 said side-wall of a second hollow organ with said output end;

10  
11 (b) affixing said input end to said first hollow organ site;

12  
13 (c) positioning said output end of said anastomosis coupling  
14 apparatus in close proximity with the severed end of said second  
15 hollow organ;

16 (d) affixing said output end to said severed end of said  
17 second hollow organ.

18  
19 2. A method for establishing an end-to-side anastomosis between  
20 a severed end of a first hollow organ and a side-wall of a second  
21 hollow organ, the method comprising:

22 (a) introducing an anastomosis coupling apparatus, having an  
23 input end and output end, said apparatus comprised to engage said  
24

1 severed end of a first hollow organ with said input end and engage  
2 said side-wall of a second hollow organ with said output end;

3  
4 (b) affixing said output end to said severed end of said  
5 second hollow organ;

6 (c) positioning said input end of said anastomosis coupling  
7 apparatus in close proximity with the site for anastomosis of the  
8 first hollow organ;

9  
10 (d) affixing said input end to said first hollow organ site.

11  
12 3. An anastomosis coupling apparatus, having an input end and  
13 output end, said apparatus comprised to engage said severed end of  
14 a first hollow organ with said input end and engage said side-wall  
15 of a second hollow organ with said output end.

16 4. The apparatus of claim 3, wherein said anastomosis coupling  
17 apparatus is "T" shaped.

18  
19 5. The apparatus of claim 3, wherein said anastomosis coupling  
20 apparatus is "V" shaped.

21 6. The apparatus of claim 3, wherein said anastomosis coupling  
22 apparatus is "U" shaped.

1 7. The apparatus of claim 3, wherein said anastomosis coupling  
2 is fabricated from a biodegradable material.

3  
4 8. The apparatus of claim 3, wherein said anastomosis coupling  
5 is fabricated from a biocompatible material.

6  
7 9. The apparatus of claim 3, wherein said anastomosis coupling  
8 is fabricated from a polymeric material.

9 10. The apparatus of claim 3, wherein said anastomosis coupling  
10 is fabricated from a metallic material.

11  
12 11. The apparatus of claim 3, wherein said anastomosis coupling  
13 apparatus has an acute angle between a longitudinal axis said  
14 input end and an longitudinal axis of said output end of said  
15 apparatus.

16 12. The apparatus of claim 11, wherein said acute angle is larger  
17 than 5 degrees.

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19 13. The apparatus of claim 3, wherein said anastomosis coupling  
20 apparatus has a right deflection angle between a right angle formed  
21 between the longitudinal axis of said input end and an axis  
22 parallel the lip of a distal end of said input end.  
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1 14. The apparatus of claim 13, wherein said right deflection angle  
2 is larger than 5 degrees.

3  
4 15. The apparatus of claim 3, wherein said anastomosis coupling  
5 apparatus has an lip deflection angle between a right angle formed  
6 between the longitudinal axis said input end and an axis parallel  
7 the lip of a distal end of said input end.

8 16. The apparatus of claim 13, wherein said lip deflection angle  
9 is larger than 5 degrees.

10  
11 17. The apparatus of claim 1 further comprising a means for  
12 remotely manipulating said anastomosis coupling apparatus for  
13 positioning and engaging said coupling apparatus.

14 18. The method of claim 1, wherein said anastomosis coupling  
15 apparatus is affixed to said severed end by sutures.

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17 19. The method of claim 1, wherein said anastomosis coupling  
18 apparatus is affixed to said severed end by staples.

19  
20 20. The method of claim 1, wherein the adhering of the severed end  
21 of the first hollow organ is effectuated by applying a  
22 biocompatible glue or adhesive.

1 21. The method of claim 1, wherein said anastomosis coupling  
2 apparatus is affixed to said severed end by an any combination of  
3 sutures, staples, glue or adhesive.

4 22. The method of claim 1, wherein said anastomosis coupling  
5 apparatus is affixed to said severed end by sutures.  
6

7 23. The method of claim 1, wherein the first and second hollow  
8 organs are both vascular lumens.  
9

10 24. The method of claim 1, wherein the first hollow organ is the  
11 left internal mammary artery.

12 25. The method of claim 1 wherein the second hollow organ is a  
13 coronary artery.  
14

15 26. The method of claim 2, wherein said anastomosis coupling is  
16 affixed to said severed end by sutures.  
17

18 27. The method of claim 2, wherein said anastomosis coupling is  
19 affixed to said severed end by staples.

20 28. The method of claim 2, wherein the adhering of the severed end  
21 of the first hollow organ is effectuated by applying a  
22 biocompatible glue or adhesive.  
23  
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1 29. The method of claim 2, wherein said anastomosis coupling is  
2 affixed to said severed end by an any combination of sutures,  
3 staples, glue or adhesive.

4 30. The method of claim 2, wherein said anastomosis coupling is  
5 affixed to said severed end by sutures.  
6

7 31. The method of claim 2, wherein the first hollow organ is the  
8 left internal mammary artery.  
9

10 32. The method of claim 2 wherein the second hollow organ is a  
11 coronary artery.  
12

13 33. The method of claim 2, wherein the first and second hollow  
14 organs are both vascular lumens.

15 34. A method for performing a coronary bypass by establishing an  
16 end-to-side anastomosis between an arterial source of oxygenated  
17 blood and a coronary vessel having a stenosis, the method  
18 comprising:  
19

20 (a) introducing a specifically configured anastomosis  
21 coupling apparatus, having an input end and output end, said  
22 apparatus comprised to secure a first hollow organ to a second  
23 hollow organ;  
24

1 (b) affixing a first end of said anastomosis coupling  
2 apparatus to a first hollow organ;

3  
4 (c) affixing a second end of said anastomosis coupling  
5 apparatus to a second hollow organ.

6 35. The method of claim 34, wherein said specifically configured  
7 anastomosis coupling apparatus is "T" shaped.

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9 36. The method of claim 34, wherein said specifically configured  
10 anastomosis coupling apparatus is "V" shaped.

11  
12 37. The method of claim 34, wherein said specifically configured  
13 anastomosis coupling apparatus is "U" shaped.

14 38. The method of claim 34, wherein said specifically configured  
15 anastomosis coupling is fabricated from a biodegradable material.

16  
17 39. The method of claim 34, wherein said specifically configured  
18 anastomosis coupling is fabricated from a biocompatible material.

19  
20 40. The method of claim 34, wherein said specifically configured  
21 anastomosis coupling is fabricated from a polymeric material.

22 41. The method of claim 34, wherein said specifically configured  
23 anastomosis coupling is fabricated from a metallic material.

1 42. The method of claim 34, wherein said specifically configured  
2 anastomosis coupling is affixed to said severed end by sutures.

3  
4 43. The method of claim 34, wherein said specifically configured  
5 anastomosis coupling is affixed to said severed end by staples.

6 44. The method of claim 34, wherein the adhering of the severed  
7 end of the first hollow organ is effectuated by applying a  
8 biocompatible glue or adhesive.

9  
10 45. The method of claim 34, wherein said specifically configured  
11 anastomosis coupling is affixed to said severed end by an any  
12 combination of sutures, staples, glue or adhesive.

13  
14 46. The method of claim 34, wherein said specifically configured  
15 anastomosis coupling is affixed to said severed end by sutures.

16 47. The method of claim 34, wherein the first hollow organ is the  
17 left internal mammary artery.

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19 48. The method of claim 34, wherein said specifically configured  
20 anastomosis coupling apparatus has an acute angle between a  
21 longitudinal axis said input end and an longitudinal axis of said  
22 output end of said apparatus.  
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1 49. The method of claim 34, wherein said acute angle is larger  
2 than 5 degrees.

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4 50. The method of claim 34, wherein said specifically configured  
5 anastomosis coupling apparatus has a right deflection angle between  
6 a right angle formed between the longitudinal axis said input end  
7 and an axis parallel the lip of a distal end of said input end.

8 51. The method of claim 34, wherein said right deflection angle is  
9 larger than 5 degrees.

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11 52. The method of claim 34, wherein said specifically configured  
12 anastomosis coupling apparatus has an lip deflection angle between  
13 a right angle formed between the longitudinal axis said input end  
14 and an axis parallel the lip of a distal end of said input end.

15 53. The method of claim 34, wherein said lip deflection angle is  
16 larger than 5 degrees.  
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